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一个被子植物"目"的新分类系统简介*

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A brief introduction to a new ordinal classification of the flowering plants

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去年,我们在本刊[36(2):178~192(1998)]介绍了 Takhtajan 的被子植物系统,若这个系统基本上是基于形态学(包括植物化学、染色体、解剖学等资料)的一个代表,那么今天我们乐意介绍一个基于吸取大量分子资料的系统。近 20 年来,分子系统学的飞速发展,足以能提出一个被子植物较全面的系统,与基于形态学的系统相得益彰,互补长短,这正是我们梦寐以求的,可以说是在重建被子植物系统发育史上又迈进了一大步。这个系统由 29 位植物学家组成的"被子植物系统发育小组(The Angiosperm Phylogeny Group)"提出,以"An ordinal classification for the families of flowering plants"为题,发表于 Annals of the Missouri Botanical Garden [85(4):531~553,1998]。我们介绍它的目的有二,其一,可以借此了解这二类系统学(形态学和分子系统学)所构建被子植物系统的异同。这或许对我们今后选题方面有所启发。其次,该文还涉及到一些划定"目"和"科"阶元的原则,对我们深入了解系统发育学派(Phylogenetics)有关这方面的观点,也是十分有益的。

1 对该系统的一些要点的说明

1.1 虽然阶元"科"常常被看作是被子植物系统的中心,但该系统主要着眼于"目"一级,其次才是"科"。理由是目前还不可能去命名被子植物所有的分支(clade)。如果命名被子植物所有的分支,既费力,也难以作为植物多样性知识交流的工具。"目"级对教育有用,也便于研究"科"的系统关系,并可置放一些系统位置尚不明确的"属"。前人所确认的"目",并非都是单系类群,而现今迫切需要的是以"科"为基本单位的单系集合类群,作为交流知识之用。

1.2 本系统包括 462 个科,40 个被认为单系的"目"和少数一些非正式命名的单系高级类群(见系统名录),这些作为"目"的分支,至少得到一个或几个方面的支持。"目"仍按国际植物命名法规(东京法规,Greuter *et al.*,1994)*** 来命名,而不是按照现在一些系统发育学派的人所提出的生物命名方法来命名,因为后者尚有许多争论。国际植物命名法规

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*** 文中引用的文献,数量过多,为节省篇幅计,故不列出,请参阅原著。

所采用的“林奈阶层体系”，虽便于记忆，但必须牢记，相同等级的分类群，除非它们是姐妹群，否则在进化上是不可以比较的。

1.3 虽然命名法规上的“优先律”对“科”级以上分类阶元的名称没有约束力，因此未必一定要遵守。但当我们选择“目”的名称时，一般都已经注意了“优先律”，并使用通用的习惯名称，使之平衡。因此，当以后发现有更早的合法名称时，就不宜再作更改了，以保持稳定。

1.4 哪些分支应作为“目”来确认，换言之如何来划分“目”的界限，首先应考虑的是“单系原则”，还要顾及到形态上（通常包括解剖、生化和发育性状等）容易识别的共裔衍征（synapomorphy）。

1.5 该文作者一般采取广义“目”的范围，认为在分类学上限制广义“目”的数目是有益的。若一旦发现在“目”间或“目”内的系统关系得到强有力支持的话，则可采用“超目”或“亚目”等级，以表示它们的进化关系。至于如何确定一个类群应当是“超目”、“目”、“亚目”或“科”，大部分的讨论是空洞无物的，因为这些决定通常是主观的。

1.6 尽量避免采用单“科”的“目”（monofamilial order），以减少分类学上的累赘，但作者也采用了一些单科目，如 Ceratophyllales*，Acorales，Arecales，因为它们的姐妹群多于一个目，若将它们合并于其中的一个姐妹群，则会违背单系原则。

1.7 既要应用“单系原则”，又要采用一些已习惯确认的科，这样有可能会导致承认许多小科。例如若考虑到 Dipsacaceae 和 Valerianaceae 已久为人们所确认，但若将它们和广义的 Caprifoliacae 分开而独立成科，那么根据“单系原则”，必须承认 Diervillaceae，Linnaeaceae 和 Morinacaea 也要独立成科。其理由是后三个科的姐妹群多于一个，若要把它们合并于其中的任何一科，势必会违背“单系原则”。这条方针，也同样适用于“目”级阶元。

1.8 有些小科，拟或合并于其单科的姐妹群，也或可以独立，例如：Cabombaceae，可能合并于 Nymphaeaceae，Kingdoniaceae 可能合并于 Circaeasteraceae，Fumariaceae 或/和 Pteridophyllaceae 合并于 Papaveraceae。在系统表中，将这些科名前加一个“＋”号，置于方括弧内，并放于其姐妹群下。

1.9 对科的界限，一般不作全面修订，仅根据该科近年来作过研究的作者的意见，尽量多确认一些单系的科。但必须指出，像下列的科，将来宜作进一步研究，如：Euphorbiaceae，Flacourtiaceae，Myrtales 中的一些科，Caryophyllales 的核心类群（包括 Achatocarpaceae，Aizoaceae，Amaranthaceae，Basellaceae，Cactaceae，Caryophyllaceae，Didiereaceae，Molluginaceae，Nyctaginaceae，Phytolaccaceae，Portulacaceae，Sarcobataceae 和 Stegnospermataceae），以及一些可能非单系而尚未界定的科，如：Boraginaceae，Scrophulariaceae，Santalaceae，Brassicaceae（包括并系的科 Capparaceae）。可能和上述相似情况的一些科，如 Apiaceae 和 Araliaceae 之间的关系，因经研究，前者被认为网结于后者。Bombacaceae，Malvaceae，Sterculiaceae 和 Tiliaceae 4 个科的界限也有问题，只有 Malvaceae 是单系的，故该文采取广义的 Malvaceae 的概念，包括 4 个科。

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* 考虑到读者均系专业人员，凡分类群的拉丁名称和非正式名称，一律都不附中译名，以节省篇幅。

1.10 该系统是 Bremer *et al*.(1997,1996,1995)系统的修正,并基于近年来诸多分子系统学分析的结果(诸如 Anderberg *et al*.,1998; Backlund & B. Bremer,1998; Bakker *et al*.,1998; Kälersjö *et al*.,1998; Soltis *et al*.,1998; Thulin *et al*.,1998; Soltis & Soltis, 1997; Soltis *et al*.,1997; Gadek *et al*.,1996; Gustafsson *et al*.,1996; Morton *et al*., 1996; Nadot *et al*.,1995; Nickrent & Soltis,1995; Soltis *et al*.,1995; Chase *et al*., 1995; Bremer *et al*.,1994; Struwe *et al*.,1994; Chase *et al*.,1993 等)。与 Bremer *et al*. 系统主要的不同有:(a)扩大了 Alismatales(包括了 Araceae)和 Caryophyllales(包括了 Droseraceae, Nepenthaceae, Polygonaceae, Plumbaginaceae 以及一些从前不包括在传统 Caryophyllales 核心类群的科);(b)确认较为广义的 Rosales(包括了 Rhamnaceae, Urticaceae, Moraceae 和它们的近缘类群);(c)加添了一些小的"目",如:Ceratophyllales, Acorales, Arecales, Proteales, Garryales, Aquifoliales; (d)取消了一些目,如 Aristolochiales, Nymphaeales, Bromeliales, Trochodendrales, Zygophyllales; (e)单子叶植物和双子叶植物,不像传统上那样给予其名称和等级,因为还没有搞清楚应给予它们何种等级为宜;(f) commelinoids(在系统学上,是单子叶植物的一个进化亚类)、rosoids 和 asterids,虽然通常分别被认为亚纲等级,subclass Commelinidae, subclass Rosidae 和 subclass Asteridae,但也存在着上述同样问题。

1.11 图 1 是表示 40 个目之间的关系。系统图中的基支(basal branch)之间的关系和被子植物的根在哪里,仍然是不清楚的。在 eudicots 分支中,对花为五数和等基数的一个大亚类群,所谓 eudicots 核心类群,愈来愈得到支持,它主要包括 Caryophyllales, Santalales, Saxifragales, rosids 和 asterids。rosids 和 asterids 被认为是单系类群,各具二大亚类,所谓 eurosids Ⅰ和Ⅱ,以及 euasterids Ⅰ和Ⅱ,也得到不断增长的支持。

1.12 系统名录中,在 monocots, commelinoids, core eudicots, rosids 等目以上的类群下,列有一些科名,表示这些科隶属于这些类群中,但不属于其下的任何"目",因为它们究竟属何"目",地位未定。同样,列在最前面的 11 个科,如 Amborellaceae, Austrobaileyaceae, Canellaceae 等,它们属于被子植物,但既不属于任何前面的 4 个基出目,也不隶于 monocots 和 eudicots。最后,还列出一些系统位置未定的科,它们大多数可能属于 eudicots(包括 core eudicots, rosids 和 asterids),但至今没有充分的资料支持它们置于 eudicots 中的哪一个类群。

2 分支图和系统名录

分支图,见本文第 611 页; 系统名录,见本文第 612～621 页。

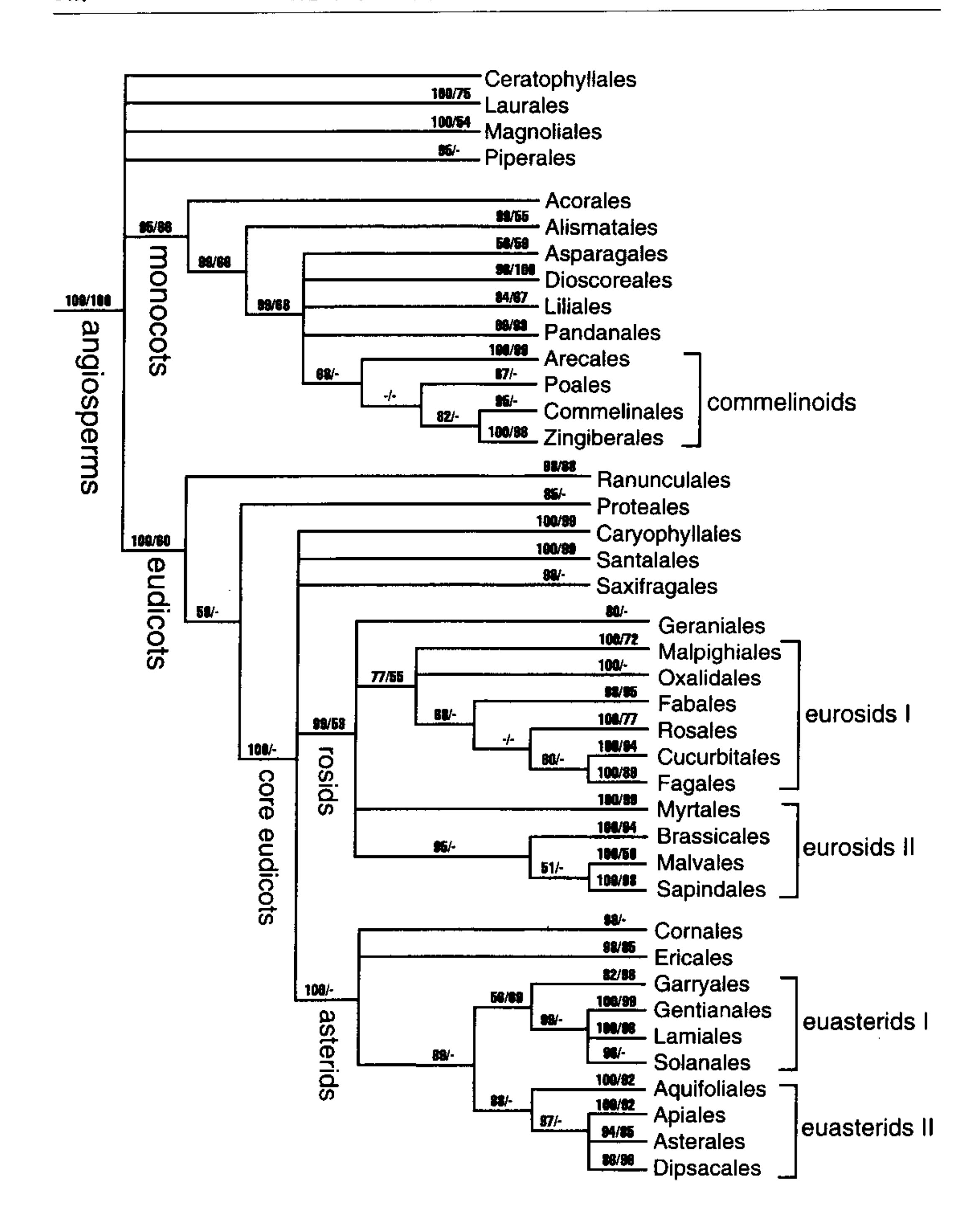


图 1　被子植物各目的系统关系，由本文所引用的近年所作分支分析结果编辑而成。在分支上的数目是表示各分支的支持率(由 Jacknife 法检验所得，波折号表示支持率小于 50%)前一数字是由分析 *rbc*L、*atp*B 和 18S rDNA 基因的 545 个序列所得结果，后一数字由分析 *rbc*L 的 2538 个序列所得。

系统名录

Amborellaceae
Austrobaileyaceae
Canellaceae
Chloranthaceae
Hydnoraceae
Illiciaceae
Nymphaeaceae
[+ Cabombaceae]
Rafflesiaceae
Schisandraceae
Trimeniaceae
Winteraceae
Ceratophyllales Bisch.
Ceratophyllaceae
Laurales perleb
Atherospermataceae
Calycanthaceae
Gomortegaceae
Hernandiaceae
Lauraceae
Monimiaceae
Siparunaceae
Magnoliales Bromhead
Annonaceae
Degeneriaceae
Eupomatiaceae
Himantandraceae
Magnoliaceae
Myristicaceae
Piperales Dumort.
Aristolochiaceae
Lactoridaceae
Piperaceae
Saururaceae
MONOCOTS
Corsiaceae
Japonoliriaceae
Nartheciaceae
Petrosaviaceae
Triuridaceae
Acorales Reveal
Acoraceae
Alismatales Dumort.
Alismataceae
Aponogetonaceae
Araceae
Butomaceae
Cymodoceaceae
Hydrocharitaceae
Juncaginaceae
Limnocharitaceae
Posidoniaceae
Potamogetonaceae
Ruppiaceae
Scheuchzeriaceae
Tofieldiaceae
Zosteraceae
Asparagales Bromhead
Agapanthaceae
Agavaceae
Alliaceae
Amaryllidaceae
Anemarrhenaceae
Anthericaceae
Aphyllanthaceae
Asparagaceae
Asphodelaceae
Asteliaceae
Behniaceae
Blandfordiaceae
Boryaceae
Convallariaceae
Doryanthaceae
Hemerocallidaceae
Herreriaceae
Hesperocallidaceae
Hyacinthaceae
Hypoxidaceae
Iridaceae
Ixioliriaceae
Lanariaceae
Laxmannianceae
Orchidaceae
Tecophilaeaceae
Themidaceae
Xanthorrhoeaceae
Xeronemataceae
Dioscoreales Hook. f.
Burmanniaceae
Dioscoreaceae
Taccaceae
Thismiaceae
Trichopodaceae
Liliales Perleb
Alstroemeriaceae
Campynemataceae
Colchicaceae
Liliaceae
Luzuriagaceae
Melanthiaceae
Philesiaceae
Ripogonaceae
Smilacaceae
Pandanales Lindl.
Cyclanthaceae
Pandanaceae
Stemonaceae
Velloziaceae
COMMELINOIDS
Abolbodaceae
Bromeliaceae
Dasypogonaceae
Hanguanaceae
Mayacaceae
Rapateaceae
Arecales Bromhead
Arecaceae
Commelinales Dumort.
Commelinaceae
Haemodoraceae
Philydraceae
Pontederiaceae
Poales Small
Anarthriaceae
Centrolepidaceae
Cyperaceae
Ecdeiocoleaceae
Eriocaulaceae
Flagellariaceae
Hydatellaceae
Joinvilleaceae
Juncaceae
Poaceae
Prioniaceae
Restionaceae
Sparganiaceae
Thurniaceae
Typhaceae
Xyridaceae
Zingiberales Griseb.
Cannaceae
Costaceae
Heliconiaceae
Lowiaceae
Marantaceae
Musaceae
Strelitziaceae
Zingiberaceae
EUDICOTS
Buxaceae
Didymelaceae
Sabiaceae
Trochodendraceae
[+ Tetracentraceae]
Proteales Dumort.
Nelumbonaceae
Platanaceae
Proteaceae
Ranunculales Dumort.
Berberidaceae
Circaeasteraceae
[+ Kingdoniaceae]
Eupteleaceae
Lardizabalaceae
Menispermaceae
Papaveraceae
[+ Fumariaceae]
[+ Pteridophyllaceae]
Ranunculaceae
CORE EUDICOTS
Aextoxicaceae
Berberidopsidaceae
Dilleniaceae
Gunneraceae
Myrothamnaceae
Vitaceae
Caryophyllales Perleb
Achatocarpaceae
Aizoaceae

Amaranthaceae
Ancistrocladaceae
Asteropeiaceae
Basellaceae
Cactaceae
Caryophyllaceae
Didiereaceae
Dioncophyllaceae
Droseraceae
Drosophyllaceae
Frankeniaceae
Molluginaceae
Nepenthaceae
Nyctaginaceae
Physenaceae
Phytolaccaceae
Plumbaginaceae
Polygonaceae
Portulacaceae
Rhabdodendraceae
Sarcobataceae
Simmondsiaceae
Stegnospermataceae
Tamaricaceae
Santalales Dumort.
Olacaceae
Opiliaceae
Loranthaceae
Misodendraceae
Santalaceae
Saxifragales Dumort.
Altingiaceae
Cercidiphyllaceae
Crassulaceae
Daphniphyllaceae
Grossulariaceae
Haloragaceae
Hamamelidaceae
Iteaceae
Paeoniaceae
Penthoraceae
Pterostemonaceae
Saxifragaceae
Tetracarpaeaceae
ROSIDS
Aphloiaceae
Crossosomataceae
Ixerbaceae
Krameriaceae
Picramniaceae
Podostemaceae
Stachyuraceae
Staphyleaceae
Tristichaceae
Zygophyllaceae
Geraniales Dumort.
Francoaceae
Geraniaceae
[+ Hypseocharitaceae]
Greyiaceae
Ledocarpaceae
Melianthaceae
Vivianiaceae
EUROSIDS Ⅰ
Celastraceae
Huaceae
Parnassiaceae
[+ Lepuropetalaceae]
Stackhousiaceae
Cucurbitales Dumort.
Anisophylleaceae
Begoniaceae
Coriariaceae
Corynocarpaceae
Cucurbitaceae
Datiscaceae
Tetramelaceae
Fabales Bromhead
Fabaceae
Polygalaceae
Quillajaceae
Surianaceae
Fagales Engl.
Betulaceae
Casuarinaceae
Fagaceae
Juglandaceae
Myricaceae
Nothofagaceae
Rhoipteleaceae
Ticodendraceae
Malpighiales Mart.
Achariaceae
Balanopaceae
Caryocaraceae
Chrysobalanaceae
Clusiaceae
Dichapetalaceae
Erythroxylaceae
Euphorbiaceae
Euphroniaceae
Flacourtiaceae
Goupiaceae
Hugoniaceae
Humiriaceae
Irvingiaceae
Ixonanthaceae
Lacistemataceae
Linaceae
Malesherbiaceae
Malpighiaceae
Medusagynaceae
Ochnaceae
Pandaceae
Passifloraceae
Putranjivaceae
Quiinaceae
Rhizophoraceae
Salicaceae
Scyphostegiaceae
Trigoniaceae
Turneraceae
Violaceae
Oxalidales Heintze
Cephalotaceae
Connaraceae
Cunoniaceae
Elaeocarpaceae
Oxalidaceae
Tremandraceae
Rosales Perleb
Barbeyaceae
Cannabaceae
Cecropiaceae
Celtidaceae
Dirachmaceae
Elaeagnaceae
Moraceae
Rhamnaceae
Rosaceae
Ulmaceae
Urticaceae
EUROSIDS Ⅱ
Tapisciaceae
Brassicales Bromhead
Akaniaceae
[+ Bretschneideraceae]
Bataceae
Brassicaceae
Caricaceae
Emblingiaceae
Gyrostemonaceae
Koeberliniaceae
Limnanthaceae
Moringaceae
Pentadiplandraceae
Resedaceae
Salvadoraceae
Setchellanthaceae
Tovariaceae
Tropaeolaceae
Malvales Dumort.
Bixaceae
[+ Diegodendraceae]
Cistaceae
Cochlospermaceae
Dipterocarpaceae
Malvaceae
Muntingiaceae
Neuradaceae
Sarcolaenaceae
Sphaerosepalaceae
Thymelaeaceae
Myrtales Rchb.
Alzateaceae
Combretaceae
Crypteroniaceae
Heteropyxidaceae
Lythraceae
Melastomataceae

Memecylaceae
Myrtaceae
Oliniaceae
Onagraceae
Penaeaceae
Psiloxylaceae
Rhynchocalycaceae
Vochysiaceae
Sapindales Dumort.
Anacardiaceae
Biebersteiniaceae
Burseraceae
Kirkiaceae
Meliaceae
Nitrariaceae
[+ Peganaceae]
Rutaceae
Sapindaceae
Simaroubaceae
ASTERIDS
Cornales Dumort.
Cornaceae
[+ Nyssaceae]
Grubbiaceae
Hydrangeaceae
Hydrostachyaceae
Loasaceae
Ericales Dumort.
Actinidiaceae
Balsaminaceae
Clethraceae
Cyrillaceae
Diapensiaceae
Ebenaceae
Ericaceae
Fouquieriaceae
Halesiaceae
Lecythidaceae
Marcgraviaceae
Myrsinaceae
Pellicieraceae
Polemoniaceae
Primulaceae
Roridulaceae
Sapotaceae
Sarraceniaceae
Styracaceae
Symplocaceae
Ternstroemiaceae
Tetrameristaceae
Theaceae
Theophrastaceae
EUASTERIDS Ⅰ
Boraginaceae
Plocospermataceae
Vahliaceae
Garryales Lindl.
Aucubaceae
Eucommiaceae
Garryaceae
Oncothecaceae
Gentianales Lindl.
Apocynaceae
Gelsemiaceae
Gentianaceae
Loganiaceae
Rubiaceae
Lamiales Bromhead
Acanthaceae
Avicenniaceae
Bignoniaceae
Buddlejaceae
Byblidaceae
Cyclocheilaceae
Gesneriaceae
Lamiaceae
Lentibulariaceae
Myoporaceae
Oleaceae
Orobanchaceae
Paulowniaceae
Pedaliaceae
[+ Martyniaceae]
Phrymaceae
Plantaginaceae
Schlegeliaceae
Scrophulariaceae
Stilbaceae
Tetrachondraceae
Verbenaceae
Solanales Dumort.
Convolvulaceae
Hydroleaceae
Montiniaceae
Solanaceae
Sphenocleaceae
EUASTERIDS Ⅱ
Adoxaceae
Bruniaceae
Carlemanniaceae
Columelliaceae
[+ Desfontainiaceae]
Eremosynaceae
Escalloniaceae
Icacinaceae
Polyosmaceae
Sphenostemonaceae
Tribelaceae
Apiales Nakai
Apiaceae
Araliaceae
Aralidiaceae
Griseliniaceae
Melanophyllaceae
Pittosporaceae
Torricelliaceae
Aquifoliales Senft
Aquifoliaceae
Helwingiaceae
Phyllonomaceae
Asterales Lindl.
Alseuosmiaceae
Argophyllaceae
Asteraceae
Calyceraceae
Campanulaceae
[+ Lobeliaceae]
Carpodetaceae
Donatiaceae
Goodeniaceae
Menyanthaceae
Pentaphragmataceae
Phellinaceae
Rousseaceae
Stylidiaceae
Dipsacales Dumort.
Caprifoliaceae
Diervillaceae
Dipsacaceae
Linnaeaceae
Morinaceae
Valerianaceae
FAMLIES OF UNCERTAIN POSITION
Balanophoraceae
Bonnetiaceae
Cardiopteridaceae
Ctenolophonaceae
Cynomoriaceae
Cytinaceae
Dipentodontaceae
Elatinaceae
Geissolomataceae
Hoplestigmataceae
Kaliphoraceae
Lepidobotryaceae
Lissocarpaceae
Lophyopyxidaceae
Medusandraceae
Metteniusaceae
Mitrastemonaceae
Paracryphiaceae
Pentaphylacaceae
Peridiscaceae
Plagiopteraceae
Pottingeriaceae
Sladeniaceae
Strasburgeriaceae
Tepuianthaceae

“目”的异名名录

Acanthales Lindl.
= Lamiales
Acerales Lindl.
= Sapindales
Actinidiales Takht. ex Reveal
= Ericales
Adoxales Nakai
-not accepted, family under euasterids Ⅱ
Aesculales Bromhead

= Sapindales
Agavales Hutch.
= Asparagales
Alliales Traub
= Asparagales
Alstroemeriales Hutch.
= Liliales
Altingiales Doweld
= Saxifragales
Amaranthales Dumort.
= Caryophyllales
Amaryllidales Bromhead
= Asparagales
Ambrosiales Dumort.
= Asterales
Ammiales Small
= Apiales
Amomales Lindl.
= Zingiberales
Ancistrocladales Takht.
= Caryophyllales
Annonales Lindl.
= Magnoliales
Anthobolales Dumort.
= Santalales
Apocynales Bromhead
= Gentianales
Aponogetonales Hutch.
= Alismatales
Arales Dumort.
= Alismatales
Araliales Reveal
= Apiales
Aralidiales Takht. ex Reveal
= Apiales
Aristolochiales Dumort.
= Piperales
Asarales Horan.
= Piperales
Asclepiadales Dumort.
= Gentianales
Asteliales Dumort.
= Asparagales
Atriplicales Horan.
= Caryophyllales
Aucabales Takht.
= Garryales
Austrobaileyales Takht. ex Reveal
-not accepted, family at beginning of system
Avenales Bromhead
= Poales
Balanopales Engl.
= Malpighiales
Balanophorales Dumort
-not accepted, family unplaced
Balsaminales Lindl.
= Ericales
Barbeyales Takht. & Reveal
= Rosales
Batales Engl.
= Brassicales
Begoniales Dumort.
= Cucurbitales
Berberidales Dumort.
= Ranunculales
Betulales Bromhead
= Fagales
Biebersteiniales Takht.
= Sapindales
Bignoniales Lindl.
= Lamiales
Bixales Lindl.
= Malvales
Boraginales Dumort.
-not accepted, family under euasterids Ⅰ
Brexiales Lindl.
-not accepted, family under eurosids Ⅰ
Bromeliales Dumort.
-not accepted, family under commelinoids
Bruniales Dumort.
-not accepted, family under euasterids Ⅱ
Brunoniales Lindl.
= Asterales
Burmanniales Heintze
= Dioscoreales
Burserales Baskerville
= Sapindales
Butomales Hutch.
= Alismatales
Buxales Takht. ex Reveal
-not accepted, family under eudicots
Byblidales Nakai ex Reveal
= Lamiales
Cactales Dumort.
= Caryophyllales
Callitrichales Dumort.
= Lamiales
Calycanthales Mart.
= Laurales
Calycerales Takht. ex Reveal
= Asterales
Campanulales Rchb.
= Asterales
Canellales Cronquist
-not accepted, family at beginning of system
Cannales Dumort.
= Zingiberales
Capparales Hutch.
= Brassicales
Caprifoliales Lindl.
= Dipsacales
Cardiopteridales Takht.
-not accepted, family under euasterids Ⅱ
Carduales Small
= Asterales
Caricales L. D. Benson
= Brassicales
Cassiales Horan.
= Fabales
Casuarinales Lindl.
= Fagales
Celastrales Baskerville
-not accepted, family under eurosids Ⅰ
Centrolepidales Takht.
= Poales
Cephalotales Nakai
= Oxalidales
Cercidiphyllales Hu ex Reveal
= Saxifragales
Chenopodiales Dumort.
= Caryophyllales
Chironiales Griseb.
= Gentianales
Chloranthales A. C. Sm. ex J.-F. Leroy
-not accepted, family at beginning of system
Cinchonales Lindl.
= Gentianales
Circaeasterales Takht.
= Ranunculales
Cistales Rchb.
= Malvales
Citrales Dumort.
= Sapindales
Cocosales Nakai
= Arecales
Colchicales Dumort.
= Liliales
Combretales Baskerville
= Myrtales
Connarales Takht. ex Reveal
= Cunoniales
Convolvulales Dumort.
= Solanales
Coriariales Lindl.
= Cucurbitales
Corylales Dumort.
= Fagales
Corynocarpales Takht.
= Cucurbitales
Crassulales Lindl.
= Saxifragales
Crossosomatales Takht. ex Reveal
-not accepted, family under rosids
Cunoniales Hutch.
= Oxalidales

Cyclanthales J. H. Schaffn.
= Pandanales
Cymodoceales Nakai
= Alismatales
Cynomoriales Burnett
-not accepted, family unplaced
Cyperales Hutch.
= Poales
Cytinales Dumort.
-not accepted, family unplaced
Daphnales Lindl.
= Malvales
Daphniphyllales Pulle ex Cronquist
= Saxifragales
Datiscales Dumort.
= Cucurbitales
Desfontainiales Takht.
-not accepted, family under euasterids Ⅱ
Diapensiales Engl. & Gilg
= Ericales
Didymelales Takht.
-not accepted, family under eudicots
Dilleniales Hutch.
-not accepted, family under core eudicots
Dioncophyllales Takht. ex Reveal
= Caryophyllales
Diospyrales Prantl
= Ericales
Droserales Griseb.
= Caryophyllales
Ebenales Engl.
= Ericales
Elaeagnales Bromhead
= Rosales
Elaeocarpales Takht.
= Oxalidales
Elatinales Nakai
-not accepted, family unplaced
Elodeales Nakai
= Alismatales
Empetrales Raf.
= Ericales
Eriocaulales Nakai
= Poales
Eucommiales Nemejc ex Cronquist
= Garryales
Euphorbiales Lindl.
= Malpighiales
Eupomatiales Takht. ex Reveal
= Magnoliales
Eupteleales Hu ex Reveal
= Ranunculales
Euryalales H. L. Li
-not accepted, family at beginning of system
Ficales Dumort.
= Rosales
Flacourtiales Heintze
= Malpighiales
Fouquieriales Takht. ex Reveal
= Ericales
Francoales Takht.
= Geraniales
Frangulales Wirtg.
= Rosales
Galiales Bromhead
= Gentianales
Geissolomatales Takht. ex Reveal
-not accepted, family unplaced
Gesneriales Dumort.
= Lamiales
Glaucidiales Takht. ex Reveal
= Ranunculales
Globulariales Dumort.
= Lamiales
Goodeniales Lindl.
= Asterales
Greyiales Takht.
= Geraniales
Grossulariales Lindl.
= Saxifragales
Gunnerales Takht. ex Reveal
-not accepted, family under core eudicots
Gyrocarpales Dumort.
= Laurales
Gyrostemonales Takht.
= Brassicales
Haemodorales Hutch.
= Commelinales
Haloragales Bromhead
= Saxifragales
Hamamelidales Griseb.
= Saxifragales
Hanguanales R. Dahlgren ex Reveal
-not accepted, family under commelinoids
Helleborales Nakai
= Ranunculales
Helwingiales Takht.
= Aquifoliales
Himantandrales Doweld & Shevyryova
= Magnoliales
Hippuridales Pulle ex Reveal
= Lamiales
Homaliales Bromhead
= Malpighiales
Hortensiales Griseb.
= Cornales
Hydatellales Cronquist
= Poales
Hydnorales Takht. ex Reveal
-not accepted, family at beginning of system
Hydrangeales Nakai
= Cornales
Hydrastidales Takht.
= Ranunculales
Hydropeltidales (Bartl.) Spenn.
-not accepted, family Nymphaeaceae at beginning of system
Hydrostachyales Diels ex Reveal
= Cornales
Hypericales Dumort.
= Malpighiales
Hypoxidales Takht.
= Asparagales
Icacinales Tiegh. ex Reveal
-not accepted, family under euasterids Ⅱ
Illiciales Hu ex Cronquist
-not accepted, family at beginning of system
Iridales Raf.
= Asparagales
Ixiales Lindl.
= Asparagales
Jasminales Dumort.
= Lamiales
Juglandales Dumort.
= Fagales
Julianiales Engl.
= Sapindales
Juncaginales Hutch.
= Alismatales
Juncales Dumort.
= Poales
Lacistematales Baskerville
= Malpighiales
Lactoridales Takht. ex Reveal
= Piperales
Lardizabalales Loconte
= Ranunculales
Lecythidales Cronquist
= Ericales
Leineriales Engl.
= Sapindales
Lentibulariales Lindl.
= Lamiales
Ligustrales Bartl. ex Bisch.
= Lamiales

Limnanthales Nakai
= Brassicales
Linales Baskerville
= Malpighiales
Loasales Bessey
= Cornales
Loganiales Lindl.
= Gentianales
Lonicerales T. Liebe
= Dipsacales
Loranthales Dumort.
= Santalales
Lythrales Caruel
= Myrtales
Marathrales Dumort.
-not accepted, family Podostemaceae under rosids
Mayacales Nakai
-not accepted, family under commelinoids
Medusagynales Takht.
= Malpighiales
Medusandrales Brenan
-not accepted, family unplaced
Melanthiales R. Dahlgren ex Reveal
= Liliales
Melastomatales Oliv.
= Myrtales
Meliales Lindl.
= Sapindales
Menispermales Bromhead
= Ranunculales
Menyanthales T. Yamaz. ex Takht.
= Asterales
Metteniusales Takht.
-not accepted, family unplaced
Mitrastemonales Makino
-not accepted, family unplaced
Monimiales Dumort.
= Laurales
Moringales Nakai
= Brassicales
Myricales Engl.
= Fagales
Myristicales Thomé
= Magnoliales
Myrothamnales Nakai ex Reveal
-not accepted, family under core eudicots
Myrsinales Spenn.
= Ericales
Najadales Dumort.
= Alismatales
Narcissales Dumort.
= Asparagales
Narthecíales Reveal & Zomlefer
-not accepted, family under monocots
Nelumbonales Reveal
= Proteales
Nepenthales Dumort.
= Caryophyllales
Nolanales Lindl.
= Solanales
Nyctaginales Dumort.
= Caryophyllales
Nymphaeales Dumort.
-not accepted, family at beginning of system
Ochnales Hutch. ex Reveal
= Malpighiales
Oenotherales Bromhead
= Myrtales
Olacales Benth.
= Santalales
Oleales Lindl.
= Lamiales
Onagrales Rchb.
= Myrtales
Opuntiales Willk.
= Caryophyllales
Orchidales Raf.
= Asparagales
Paeoniales Heintze
= Saxifragales
Pandales Engl. & Gilg
= Malpighiales
Papaverales Dumort.
= Ranunculales
Paracryphiales Takht.
-not accepted, family unplaced
Paridales Dumort.
= Liliales
Parnassiales Nakai
-not accepted, family under eurosids I
Passiflorales Dumort.
= Malpighiales
Penaeales Lindl.
= Myrtales
Petiveriales Lindl.
= Caryophyllales
Petrosaviales Takht.
-not accepted, family under monocots
Philydrales Dumort.
= Commelinales
Physenales Takht.
= Caryophyllales
Pinguiculales Dumort.
= Lamiales
Pittosporales Lindl.
= Apiales
Plantaginales Lindl.
= Lamiales
Platanales J. H. Schaffn.
= Proteales
Plumbaginales Lindl.
= Caryophyllales
Podophyllales Dumort.
= Ranunculales
Podostemales Lindl.
-not accepted, family under rosids
Polemoniales Bromhead
= Ericales
Polygalales Dumort.
= Fabales
Polygonales Dumort.
= Caryophyllales
Pontederiales Hook. f.
= Commelinales
Portulacales Dumort.
= Caryophyllales
Posidoniales Nakai
= Alismatales
Potamogetonales Dumort.
= Alismatales
Primulales Dumort.
= Ericales
Quercales Burnett
= Fagales
Rafflesiales Oliv.
-not accepted, family at beginning of system
Resedales Dumort.
= Brassicales
Restionales J. H. Schaffn.
= Poales
Rhamnales Dumort.
= Rosales
Rhinanthales Dumort.
= Lamiales
Rhizophorales Tiegh. ex Reveal
= Malpighiales
Rhodorales Horan.
= Ericales
Rhoipteleales Novák ex Reveal
= Fagales
Roridulales Nakai
= Ericales
Rubiales Dumort.
= Gentianales
Ruppiales Nakai
= Alismatales
Rutales Perleb
= Sapindales
Sabiales Takht.
-not accepted, family under eudicots

Salicales Lindl.
= Malpighiales
Salvadorales R. Dahlgren ex Reveal
= Brassicales
Samolales Dumort.
= Ericales
Samydales Dumort.
= Malpighiales
Sanguisorbales Dumort.
= Rosales
Sapotales Hook. f.
= Ericales
Sarraceniales Bromhead
= Ericales
Scheuchzeriales B. Boivin
= Alismatales
Scleranthales Dumort.
= Caryophyllales
Scrophulariales Lindl.
= Lamiales
Scyphostegiales Croizat
= Malpighiales
Sedales Rchb.
= Saxifragales
Silenales Lindl.
= Caryophyllales
Simmondsiales Reveal
= Caryophyllales
Smilacales Lindl.
= Liliales
Stellariales Dumort.
= Caryophyllales
Stylidiales Takht. ex Reveal
= Asterales
Styracales Bisch.
= Ericales
Taccales Dumort.
= Dioscoreales
Tamales Dumort.
= Dioscoreales
Tamaricales Hutch.
= Caryophyllales
Tecophilaeales Traub ex Reveal
= Asparagales
Theales Lindl.
= Ericales
Theligonales Nakai
= Gentianales
Thymelaeales Willk.
= Malvales
Tiliales Caruel
= Malvales
Tofieldiales Reveal & Zomlefer
= Alismatales
Torricelliales Takht. ex Reveal
= Apiales
Tovariales Nakai
= Brassicales
Trilliales Takht.
= Liliales
Triuridales Hook. f.
-not accepted, family under monocots
Trochodendrales Takht. ex Cronquist
-not accepted, family under eudicots
Tropaeolales Takht. ex Reveal
= Brassicales
Turnerales Dumort.
= Malpighiales
Typhales Dumort.
= Poales
Ulmales Lindl.
= Rosales
Urticales Dumort.
= Rosales
Vacciniales Dumort.
= Ericales
Vallisneriales Nakai
= Alismatales
Velloziales R. Dahlgren ex Reveal
= Pandanales
Veratrales Dumort.
= Liliales
Verbenales Horan.
= Lamiales
Viburnales Dumort.
-not accepted, family under euasterids II
Vincales Horan.
= Gentianales
Violales Perleb
= Malpighiales
Vitales Reveal
-not accepted, family under core eudicots
Vochysiales Dumort.
= Myrtales
Winterales A. C. Sm. ex Reveal
-not accepted, family at beginning of system
Xyridales Lindl.
= Poales
Zosterales Nakai
= Alismatales
Zygophyllales Takht.
-not accepted, family under rosids

习见“科”的异名名录

Abrophyllaceae
= Carpodetaceae
Acanthochlamydaceae
= Velloziaceae
Aceraceae
= Sapindaceae
Achradaceae
= Sapotaceae
Aegicerataceae
= Myrsinaceae
Agdestidaceae
= Phytolaccaceae
Aitoniaceae
= Meliaceae
Alangiaceae
= Cornaceae
Aloaceae
= Asphodelaceae
Alsinaceae
= Caryophyllaceae
Ambrosiaceae
= Asteraceae
Amygdalaceae
= Rosaceae
Androstachyaceae
= Euphorbiaceae
Antoniaceae
= Loganiaceae
Apodanthaceae
= Rafflesiaceae
Apostasiaceae
= Orchidaceae
Aptandraceae
= Olacaceae
Aristoteliaceae
= Elaeocarpaceae
Asclepiadaceae
= Apocynaceae
Asteranthaceae
= Lecythidaceae
Averrhoaceae
= Oxalidaceae
Avetraceae
= Dioscoreaceae
Balanitaceae
= Zygophyllaceae
Barbeiuaceae
= Phytolacaceae
Barclayaceae
= Nymphaeaceae
Barringtoniaceae
= Lecythidaceae
Baueraceae
= Cunoniaceae
Baxteriaceae
= Dasypogonaceae
Bembiciaceae
= Flacourtiaceae
Berzeliaceae
= Bruniaceae
Bischofiaceae
= Euphorbiaceae
Blepharocaryaceae

= Anacardiaceae
Boerlagellaceae
= Sapotaceae
Bombacaceae
= Malvaceae
Boopidaceae
= Calyceraceae
Bretschneideraceae
= Akaniaceae
Brexiaceae
= Celastraceae
Brunelliaceae
= Cunoniaceae
Brunoniaceae
= Goodeniaceae
Bumeliaceae
= Sapotaceae
Burchardiaceae
= Colchicaceae
Byttneriaceae
= Malvaceae
Cabombaceae
= Nymphaeaceae
Caesalpiniaceae
= Fabaceae
Calectasiaceae
= Dasypogonaceae
Callitrichaceae
= Plantaginaceae
Calochortaceae
= Liliaceae
Camelliaceae
= Theaceae
Canotiaceae
= Celastraceae
Cansjeraceae
= Opiliaceae
Capparaceae
= Brassicaceae
Carduaceae
= Asteraceae
Cassythaceae
= Lauraceae
Chailetiaceae
= Dichapetalaceae
Chenopodiaceae
= Amaranthaceae
Chionographidaceae
= Melanthiaceae
Chloanthaceae
= Lamiaceae
Cichoriaceae
= Asteraceae
Cleomaceae
= Brassicaceae
Cneoraceae
= Rutaceae
Cobaeaceae
= Polemoniaceae
Compositae
= Asteraceae
Conostylidaceae
= Haemodoraceae
Cordiaceae
= Boraginaceae
Coridaceae
= Primulaceae
Corokiaceae
= Argophyllaceae
Corylaceae
= Betulaceae
Croomiaceae
= Stemonaceae
Cruciferae
= Brassicaceae
Curtisiaceae
= Cornaceae
Cuscutaceae
= Convolvulaceae
Cyananthaceae
= Campanulaceae
Cyanastraceae
= Tecophilaeaceae
Cynocrambaceae nom. illeg.
= Rubiaceae
Cyphiaceae
= Campanulaceae
Cyphocarpaceae
= Campanulaceae
Cypripediaceae
= Orchidaceae
Dactylanthaceae
= Balanophoraceae
Davidiaceae
= Cornaceae
Davidsoniaceae
= Cunoniaceae
Decaisneaceae
= Lardizabalaceae
Desfontainiaceae
= Columelliaceae
Dialypetalanthaceae
= Rubiaceae
Dianellaceae
= Hemerocallidaceae
Dichondraceae
= Convolvulaceae
Diclidantheraceae
= Polygalaceae
Diegodendraceae
= Bixaceae
Dionaeaceae
= Droseraceae
Dracaenaceae
= Convallariaceae
Duabangaceae
= Lythraceae
Duckeodendraceae
= Solanaceae
Dulongiaceae nom. illeg.
= Phyllonomaceae
Dysphaniaceae
= Amaranthaceae
Ehretiaceae
= Boraginaceae
Ellisiophyllaceae
= Scrophulariaceae
Empetraceae
= Ericaceae
Epacridaceae
= Ericaceae
Eremolepidaceae
= Santalaceae
Eriospermaceae
= Convallariaceae
Erycibaceae
= Convolvulaceae
Erythropalaceae
= Olacaceae
Eucryphiaceae
= Cunoniaceae
Euryalaceae
= Nymphaeaceae
Exocarpaceae
= Santalaceae
Flindersiaceae
= Rutaceae
Foetidiaceae
= Lecythidaceae
Frangulaceae
= Rhamnaceae
Fumariaceae
= Papaveraceae
Funkiaceae
= Agavaceae
Galacaceae
= Diapensiaceae
Geitonoplesiaceae
= Hemerocallidaceae
Geniostomaceae
= Loganiaceae
Geosiridaceae
= Iridaceae
Gisekiaceae
= Phytolaccaceae
Glaucidiaceae
= Ranunculaceae
Globulariaceae
= Plantaginaceae
Goetzeaceae
= Solanaceae
Gonystylaceae
= Thymelaeaceae
Gouaniaceae
= Rhamnaceae
Gramineae
= Poaceae
Gronoviaceae
= Loasaceae
Gustaviaceae

= Lecythidaceae
Guttiferae
= Clusiaceae
Gyrocarpaceae
= Hernadiaaceae
Halophilaceae
= Hydrocharitaceae
Halophytaceae
= Amaranthaceae
Hectorellaceae
= Portulacaceae
Heliotropiaceae
= Boraginaceae
Heloniadaceae
= Melanthiaceae
Helosidaceae
= Balanophoraceae
Henriqueziaceae
= Rubiaceae
Hippocastanaceae
= Sapindaceae
Hippocrateaceae
= Celastraceae
Hippuridaceae
= Plantaginaceae
Hortoniaceae
= Monimiaceae
Hostaceae
= Agavaceae
Humbertiaceae
= Convolvulaceae
Hydrastidaceae
= Ranunculaceae
Hydrocotylaceae
= Araliaceae
Hydropeltidaceae
= Nymphaeaceae
Hydrophyllaceae
= Boraginaceae
Hymenocardiaceae
= Euphorbiaceae
Hypecoaceae
= Papaveraceae
Hypericaceae
= Clusiaceae
Hypseocharitaceae
= Geraniaceae
Idiospermaceae
= Calycanthaceae
Illecebraceae
= Caryophyllaceae
Jasionaceae
= Campanulaceae
Jasminiaceae
= Oleaceae
Johnsoniaceae
= Hemerocallidaceae
Julianiaceae
= Anacardiaceae
Kiggelariaceae
= Flacourtiaceae
Kingdoniaceae
= Circaeasteraceae
Kirengeshomaceae
= Hydrangeaceae
Labiatae
= Lamiaceae
Langsdorffiaceae
= Balanophoraceae
Leeaceae
= Vitaceae
Leguminosae
= Fabaceae
Leitneriaceae
= Simaroubaceae
Lemnaceae
= Araceae
Lennoaceae
= Boraginaceae
Leoniaceae
= Violaceae
Lepuropetalaceae
= Parnassiaceae
Lilaeaceae
= Juncaginaceae
Limoniaceae
= Plumbaginaceae
Liriodendraceae
= Magnoliaceae
Lobeliaceae
= Campanulaceae
Lomandraceae
= Laxmanniaceae
Lophiraceae
= Ochnaceae
Lophophytaceae
= Balanophoraceae
Luxemburgiaceae
= Ochnaceae
Malaceae
= Rosaceae
Martyniaceae
= Pedaliaceae
Mastixiaceae
= Cornaceae
Medeolaceae
= Liliaceae
Meliosmaceae
= Sabiaceae
Mendonciaceae
= Acanthaceae
Mesembryanthemaceae
= Aizoaceae
Mimosaceae
= Fabaceae
Monotaceae
= Dipterocarpaceae
Monotropaceae
= Ericaceae
Mouririaceae
= Memecylaceae
Moutabeaceae
= Polygalaceae
Myriophyllaceae
= Haloragaceae
Mystropetalaceae
= Balanophoraceae
Najadaceae
= Hydrocharitaceae
Nandinaceae
= Berberidaceae
Napoleonaceae
= Lecythidaceae
Naucleaceae
= Rubiaceae
Nectaropetalaceae
= Erythroxylaceae
Nelsoniaceae
= Acanthaceae
Nemacladaceae
= Campanulaceae
Nesogenaceae
= Cyclocheilaceae
Nolanaceae
= Solanaceae
Nolinaceae
= Convallariaceae
Nupharaceae
= Nymphaeaceae
Nyctanthaceae
= Oleaceae
Nyssaceae
= Cornaceae
Octoknemaceae
= Olacaceae
Oftiaceae
= Scrophulariaceae
Ophiopogonaceae
= Convallariaceae
Osyridaceae
= Santalaceae
Pachysandraceae
= Buxaceae
Palmae
= Arecaceae
Papilionaceae
= Fabaceae
Peganaceae
= Nitrariaceae
Pentastemonaceae
= Stemonaceae
Peperomiaceae
= Piperaceae
Periplocaceae
= Apocynaceae
Peripterygiaceae
= Cardiopteridaceae
Petermanniaceae
= Colchicaceae
Petiveriaceae

= Phytolaccaceae
Philadelphaceae
= Hydrangeaceae
Phormiaceae
= Hemerocallidaceae
Phylicaceae
= Rhamnaceae
Picrodendraceae
= Euphorbiaceae
Pinguiculaceae
= Lentibulariaceae
Pistaciaceae
= Anacardiaceae
Pistiaceae
= Araceae
Platystemonaceae
= Papaveraceae
Plumeriaceae
= Apocynaceae
Podoaceae
= Anacardiaceae
Podophyllaceae
= Berberidaceae
Polygonanthaceae
= Anisophylleaceae
Potaliaceae
= Gentianaceae
Ptaeroxylaceae
= Rutaceae
Pteridophyllaceae
= Papaveraceae
Punicaceae
= Lythraceae
Pyrolaceae
= Ericaceae
Ranzaniaceae
= Berberidaceae
Reaumuriaceae
= Tamaricaceae
Retziaceae
= Stilbaceae
Rhinanthaceae
= Orobanchaceae
Rhodoleiaceae
= Hamamelidaceae
Rhopalocarpaceae
= Sphaerosepalaceae
Rhynchothecaceae
= Ledocarpaceae
Roxburghiaceae
= Stemonaceae
Ruscaceae
= Convallariaceae
Saccifoliaceae
= Gentianaceae
Salaciaceae
= Celastraceae
Salicorniaceae
= Amaranthaceae
Salpiglossidaceae
= Solanaceae
Sambucaceae
= Adoxaceae
Samolaceae
= Primulaceae
Saniculaceae
= Apiaceae
Sarcophytaceae
= Balanophoraceae
Sarcospermataceae
= Sapotaceae
Sargentodoxaceae
= Lardizabalaceae
Saurauiaceae
= Actinidiaceae
Sauvagesiaceae
= Ochnaceae
Scaevolaceae
= Goodeniaceae
Scepaceae
= Euphorbiaceae
Schoepfiaceae
= Olacaceae
Sclerophylacaceae
= Solanaceae
Scoliopaceae
= Liliaceae
Scybaliaceae
= Balanophoraceae
Scytopetalaceae
= Lecythidaceae
Selaginaceae
= Scrophulariaceae
Sesamaceae
= Pedaliaceae
Sesuviaceae
= Aizoaceae
Simethidaceae
= Hemerocallidaceae
Siphonodontaceae
= Celastraceae
Sonneratiaceae
= Lythraceae
Spigeliaceae
= Loganiaceae
Stenomeridaceae
= Dioscoreaceae
Sterculiaceae
= Malvaceae
Stilaginaceae
= Euphorbiaceae
Strychnaceae
= Loganiaceae
Stylobasiaceae
= Surianaceae
Stylocerataceae
= Buxaceae
Symphoremataceae
= Lamiaceae
Syringaceae
= Oleaceae
Tetracentraceae
= Trochodendraceae
Tetradiclidaceae
= Peganaceae
Tetragoniaceae
= Aizoaceae
Tetrastylidiaceae
= Olacaceae
Thalassiaceae
= Hydrocharitaceae
Theligonaceae
= Rubiaceae
Thunbergiaceae
= Acanthaceae
Tiliaceae
= Malvaceae
Trapaceae
= Lythraceae
Trapellaceae
= Pedaliaceae
Tribulaceae
= Zygophyllaceae
Tricyrtidaceae
= Liliaceae
Trilliaceae
= Melanthiaceae
Triplostegiaceae
= Valerianaceae
Uapacaceae
= Euphorbiaceae
Ullucaceae
= Basellaceae
Umbelliferae
= Apiaceae
Utriculariaceae
= Lentibulariaceae
Uvulariaceae
= Colchicaceae
Vacciniaceae
= Ericaceae
Viburnaceae
= Adoxaceae
Viscaceae
= Santalaceae
Viticaceae
= Lamiaceae
Walleriaceae
= Tecophilaeaceae
Wellstediaceae
= Boraginaceae
Xanthophyllaceae
= Polygalaceae
Xerophyllaceae
= Melanthiaceae
Zannichelliaceae
= Potamogetonaceae